WHAT IS CLAIMED IS:

1   1. A method for detecting atrial fibrillation, comprising
2   repetitively obtaining a plurality of groups of n successive RR
3   intervals from a patient's heart potentials, n being a natural number greater than 1,
4   defining a plurality of points in an n-dimensional space of numbers,
5   each point representing one of said groups of n successive RR intervals, to form a
6   characteristic distribution of said points,
7   comparing said characteristic distribution with at least one normal
8   distribution derived from a healthy heart, and
9   generating at least one state signal representing the state of the heart
10   from said deviation.

1   2. The method of claim 1, comprising
2   calculating a virtual electronic two-dimensional scatter plot based on said RR
3   intervals,
4   electronically checking said scatter plot for the presence of a
5   prescribed geometrical point structure, and
6   actuating a visual display depending on the result of said electronic
7   check.

1   3. The method of claim 2, wherein a plurality of state signals are
2   generated, each successive state signal associated with an increased risk of atrial
3   fibrillation correlating to increased divergence from said normal distribution.

1   4. An apparatus for detecting atrial fibrillation by the method of
2   claim 1, comprising
3   means for repetitively obtaining a plurality of groups of n successive
4   RR intervals from a patient's heart potentials, n being a natural number greater than
5   1,
6   means for defining a plurality of points in an n-dimensional space of
7   numbers, each point representing one of said groups of n successive RR intervals,
8   to form a characteristic distribution of said points,

9   means for comparing said characteristic distribution with at least one

10   normal distribution derived from a healthy heart, and

11   means for generating a state signal representing the state of the heart

12   from said deviation.

1   5. The apparatus of claim 4, wherein said state signal is generated

2   so as to distinguish between at least three values representative of at least three

3   degrees of deviation of said characteristic distribution from said normal distribution.

1   6. The apparatus of claim 5, comprising visual display means

2   actuated by means of said state signal.

1   7. The apparatus of claim 6, wherein said visual display means

2   includes a plurality of individual displays corresponding in number to the number

3   of possible values of said state signal.

1   8. The apparatus of claim 7, wherein said visual display means

2   includes an LCD device having a plurality of individually activatable units.

1   9. The apparatus of claim 4, comprising

2   electrodes applied to the patient for deriving said heart potentials,

3   analog circuit means connected to said electrodes and including a

4   preamplifier, an electronic filter and a main amplifier, and

5   digital circuit means including an A/D converter, a sample-and-hold

6   stage, a memory which holds said normal distribution, and a microcontroller.

1   10. The apparatus of claim 9, wherein said microcontroller is adapted

2   to generate a signal fed back to said preamplifier for controlling the gain thereof.

1   11. The apparatus of claim 9, wherein said microcontroller is adapted

2   to generate a clock signal for controlling said A/D converter and said

3   sample-and-hold stage.

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12. The apparatus of claim 4, comprising a battery for powering said analog and digital circuit means, and means for generating a warning signal if the voltage of said battery falls below a predetermined value.

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13. The apparatus of claim 12, further comprising means for actuating said warning signal generating means if said state signal assumes a critical value.

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14. The apparatus of claim 13, wherein warning signal generating means includes a visual display adapted to operate in a flash mode.

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15. The apparatus of claim 13, wherein warning signal generating means includes an audio signal generator.